THE CONCEPT OF DEATH: MODERN DEFINITIONAL PROBLEMS AND THEIR IMPACT UPON THE INSURANCE INDUSTRY

I. INTRODUCTION

Since time immemorial, the idea, or concept, of death has triggered almost every type of reaction and emotion that man is humanly capable of experiencing. However, there have been very few problems concerning the definition of death until recently. Since the mid-1960's, increasingly difficult problems have become evident.

Modern science and technology not only have placed men on the moon, but have enabled skilled surgeons to remove major organs from one human being and place them in another, with varying prospects for the subsequent survival of the donee of the transplant.[1] In addition to moral, ethical, and religious considerations, serious problems have required the consideration of both the medical and legal professions. Review of the literature in each of the respective professions reveals thorough consideration of the many problems, and at least partial solutions are being reached. Where appropriate, legislation has been passed.

The purpose of this Note is to discuss and analyze the concepts, problems, and developments mentioned above, and then to consider various proposals, and additional alternative solutions which the life and health insurance industries must consider.

II. DEFINITION OF "DEATH"

A. *Traditional Concepts*

Jurists have felt in the past, and probably still feel, that determination of death is properly the province of the physician or other medical authorities. Nevertheless, we are not without judicial pronouncement on the subject of death. As late as 1964, a court stated: "Death is not an ambiguous term, and there is no room for construction."[2] Another confident judicial opinion contained the following: "The word 'die,' when applied to a human being, has a definite meaning. It is in no sense ambiguous . . . ."[3] In 1950, a

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[1] *See* Thompson, *The Tragic Record of Heart Transplants*, 71 LIFE, Sept. 17, 1971, at 56. "On the third anniversary of human heart transplants, Dec. 3, 1970, the American Heart Association toted up the worldwide statistics and announced that 166 heart transplants had been done since Christiaan Barnard opened the door in 1968 and that only 23 were still alive, giving the procedure an overall mortality rate of more than 85%. Ten of the 23 still living had survived for more than two years . . . ." *Id.* at 69.

[2] Douglas v. Southwestern Life Ins. Co., 374 S.W.2d 788, 793 (Tex. Civ. App. 1964).

[3] Stead v. Department of Labor and Indus., 188 Wash. 171, 175, 61 P.2d 1307, 1309 (1936).

California appellate court stated: "[D]eath occurs precisely when life ceases and does not occur until the heart stops beating and respiration ends. Death is not a continuing event and is an event that takes place at a precise time."[4]

Two years later this definition was cited with approval in *Gray v. Sawyer*,[5] although the court's approval seems strained to the point of being ludicrous. In an action involving the question of survivorship, a new trial was requested because of newly acquired evidence, to wit: a witness had heard the noise of the automobile-train accident and had gone to the scene where she saw the wife in a decapitated state, with the body actively bleeding. The opinion states:

> Realistically, a person is dead when there has been a complete decapitation of the head . . . ; but upon a hypothetical question submitting the above statements of Mrs. Hickey and, as well, the terrific mangling of the body of her husband and other conditions relating to both, several doctors expressed the opinion that Mrs. Gugel had survived her husband for a fleeting moment. The doctors told the court that a body is not dead so long as there is a heart beat and that may be evidenced by the gushing of blood in spurts. This is so though the brain may have quit functioning.[6]

The court did, however, affirm denial of a new trial.

Evidence in a case recently decided by the Kansas supreme court[7] included disclosures that any one of five bullets fired by the husband into his wife's head would have caused her to become unconscious and die almost instantaneously. This evidence was considered sufficient to support a finding that the wife's death occurred before the husband's suicide, in light of the fact that investigating officers could find no evidence of movement of the wife's body after she was shot. The court stated generally: "Death is the complete cessation of all vital functions without possibility of resuscitation."[8]

A late nineteenth century pronouncement by the Supreme Court of California intimates another interesting facet of this concept: "To say that one died from natural causes is to say that he was not killed; that is, he did not die through external violence or through human agency."[9] The California court cited various dictionaries as their authorities for an operative definition of death.[10] It is interesting to note that *Black's Law Dictionary* definitions of various terms have not changed materially since the turn of the century:

> *Death* - The cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood, and a cessa-

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[4] Thomas v. Anderson, 96 Cal. App. 2d 371, 376, 215 P.2d 478, 482 (Dist. Ct. App. 4th 1950).
[5] 247 S.W.2d 496 (Ct. App. Ky. 1952).
[6] *Id.* at 497.
[7] United Trust Co. v. Pyke, 199 Kan. 1, 427 P.2d 67 (1967).
[8] *Id.* at 4, 427 P.2d at 71.
[9] Slevin v. Board of Police Pension Fund Comm'rs, 123 Cal. 130, 131, 55 P. 785, 786 (1898).
[10] *Id.*

> tion of the animal and vital functions consequent thereon, such as respiration, pulsation, etc.—*Natural Death* - a death which occurs by the unassisted operation of natural causes, as distinguished not only from "civil death," but also from "violent death."—*Violent death* - one caused or accelerated by the interference of human agency;-distinguished from "natural death."[11]

In *Smith v. Smith*,[12] the Supreme Court of Arkansas not only quoted *Black's* definition of death,[13] but in addition took judicial notice that a person who is breathing, though unconscious, is not dead.[14] The Iowa supreme court, in *Hill v. Travelers' Insurance Co.*,[15] construed an insurance contract, and stated: "The word 'disability' does not express the same meaning as the word 'death;' nor is it ordinarily used as signifying the same thing. 'Disability' is defined as a want of competent power, strength, or physical ability; weakness; incapacity; impotence . . .; appellant has cited no case in which it [the word 'disability'] is held to mean death."[16]

The reader should consider whether judicial pronouncements such as the above will suffice in the context of modern medical complexities, as discussed below. It seems basically correct to state that until quite recently both doctors and lawyers alike considered the concept of death as providing little, if any, definitional problems.

B. *Modern Complexities—Tentative Answers*

1. *Overview*

As mentioned earlier, the literature of both the medical and legal professions is replete with discussion of the problems concerning formulation of a workable definition of death compatible with modern medical science.

> These new techniques . . . have clearly demonstrated the survival of transplanted cadaver organs, have sustained individuals for prolonged periods without spontaneous respiratory or cardiac movements and without evidence of central nervous system activity, and have effected resuscitation of individuals who would formerly have been considered dead. The task of defining death, including determination of the precise moment of its arrival has therefore become marked by complexities not previously encountered.[17]

Indeed, since the first transplantation of a human heart on December 3, 1967,[18] and during a subsequent one year period which saw one surgeon perform twenty-two heart transplants,[19] "the heart transplant operations have

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11 BLACK'S LAW DICTIONARY 488-89 (4th rev. ed. 1968).
12 229 Ark. 579, 317 S.W.2d 275 (1958).
13 *Id.* at 586, 317 S.W.2d at 279.
14 *Id.* at 589, 317 S.W.2d at 281.
15 146 Iowa 133, 124 N.W. 898 (1910).
16 *Id.* at 135, 124 N.W. at 898.
17 Halley & Harvey, *Medical vs. Legal Definitions of Death*, 204 J.A.M.A. 423, 424 (1968).
18 N.Y. Times, Dec. 4, 1967, § A, at 1, col. 2.
19 71 LIFE, Sept. 17, 1971, at 56. "In the space of one year dating from May 3,

raised a veritable merry-go-round of issues, involving medicine, law, ethics, morality, sociology, philosophy, religion, psychology, economics and politics."[20] Closely interrelated medical-legal problem areas shall be examined in some detail; however, discussion of other issues alluded to above shall be extremely limited. The immediate concern is to review the problems involved in reaching a workable definition of death.

2. *Recognition of Conflicts*

While it has been noted that traditional judicial pronouncements have been simplistic in light of modern medicine, familiarity with the common law definitions will facilitate comparison with medical norms and formulation of guidelines considered necessary and valuable for future reference. In an article[21] coauthored by M.M. Halley (an attorney-physician), examples of actual clinical situations which emphasized the serious difficulties sometimes encountered in establishing the moment of death were reported. Such cases, according to the authors, "illustrate the desirability of precise and uniform definitions of death, identical in both law and medicine."[22] The legal conception(s) of death will override the medical in any instance where the two are not in agreement and "may determine civil or criminal liability in such areas as initiation of resuscitation, interruption of sustaining devices, or other acts or omissions relating to the deceased."[23]

As is evident from the earlier brief review of judicial definitions of death, courts have not been completely uniform, nor have they been scientifically exact. However, there seems to be a developing legal conceptualization capable of permitting determination of death as an event which occurs at a precise time.

> Judicial and authoritative construction of legal death . . . is crystallizing around specific basic criteria which, when taken collectively, present a coherent picture—although individual terms are indefinite. These criteria are (1) cessation of "vital functions," not sharply defined but presumably at least including the highest functions, namely, those of the central nervous system as well as respiration and circulation; (2) cessation of respiration, again indirectly including the brain, the center of respiration; (3) cessation of circulation, including cardiac action as manifested by pulsation or special tests; and (4) impossibility of resuscitation.[24]

Recognition must be made that although time of death would seemingly be at a precise time, the so-called vital functions are not clearly defined. Therefore reasonable minds might differ, even though it is commonly assumed that

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1968, [Dr. Denton] Cooley performed 22 heart transplants, more than any other surgeon in the world."

[20] Sadler & Sadler, *Transplantation And The Law: The Need For Organized Sensitivity*, 57 GEO. L.J. 5, 6 (1968).

[21] Halley & Harvey, *supra* note 17.

[22] *Id.* at 423.

[23] *Id.* at 424.

[24] *Id.* at 425.

"vital functions" contemplated by judicial authorities refer to the brain, the respiratory system, and the circulatory system.[25]

3. *Traditional Medical Concept of Death*

Traditionally, physicians have used a criterion for death which has been termed "clinical death." This concept would define death as stoppage of heartbeat and breathing (respiration). "The standard is based on the medical fact that respiration, heart action, and brain function are closely related to each other, and the cessation of any one of them will bring the other two to a halt within a very few minutes."[26] The "traditional," unconditional interplay between circulation, respiration, and brain activity has, however, been altered in recent years whenever life-supporting machines and techniques have been utilized.

The complexities began as early as the 1940's when Claude Beck demonstrated, to the astonishment of the medical profession, that the human heart could be "brought back to life."[27] "This brought into use the terms 'apparent death' when cardiac arrest occurred and 'actual death' when all resuscitative measures failed."[28] In light of the fact that cardiac resuscitation is virtually meaningless to the patient unless severe brain damage is avoided, such terms as "the four-minute limit for cardiac arrest" and "cerebral death" (when all the higher brain functions, such as consciousness, were destroyed) have been coined.[29]

While the literature is abundantly supplied with pleas for a revised medical approach[30] and for alignment of medical and legal definitions so as to provide uniform guidelines,[31] change has not occurred immediately; indeed, one prominent physician feels that the medical profession has an interest in maintenance of the rather vague status quo. "[T]he medical profession appears reluctant to establish these new criteria because transplant science is developing so rapidly that implementation of rigid criteria today might limit medical innovation tomorrow."[32] Nonetheless, it seems that physicians have conscientiously pursued workable guidelines.

4. *Heart Transplants and Attendant Complexities*

A workable definition of death has seemingly been pursued with an increased intensity. Transplantation of the human heart, first accomplished successfully in 1967, has been chiefly responsible for such impetus. Apparently the public has become increasingly aware and interested in the problems which

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25 *Id.*
26 Wasmuth, *The Concept of Death*, 30 OHIO ST. L.J. 32 (1969).
27 Corday, *Life-Death In Human Transplantation*, 55 A.B.A.J. 629, 630 (1969).
28 *Id.*
29 *Id.*
30 *See, e.g.*, Corday, *supra* note 27.
31 *See, e.g.*, Halley & Harvey, *supra* note 17.
32 Corday, *supra* note 27, at 630.

face the transplant surgeon. Stated simply, the basic requirement for a successful heart transplant operation is a live heart obtained from a dead donor. It is assumed that, with rare exception, very few living persons would desire to initiate heart donation while still living.[33] But alas, the problem is more than obvious. Will we allow our ideas and conceptions of that mysterious entity called death to adapt so as to allow removal of a live heart? "[R]emoval of the beating heart from a living patient means certain death to the donor and has raised the fearsome question by some authorities of the commission of a wrongful act."[34]

Among the numerous problems[35] facing the transplant surgeon are the uncertainties concerning the legal consequences of his acts. Much of the problem seems to stem from certain harsh facts concerning the requisite of a "live" heart for successful transplant. "Certain brain cells cannot withstand an interruption in circulation, and therefore oxygen supply, for more than three to six minutes. . . . [W]e are concerned with considerably more than the mere survival of a given type of cell. The cell must be able to resume its normal *functioning*."[36] The term "cellular death" has been applied to the situation where a patient has suffered irreparable brain cell damage.[37]

5. *Medical-Legal Conflicts—Irreconcilable?*

M.M. Halley and W.F. Harvey submitted that, as of 1968, the following represented the alignment between medical and legal definitions of death:

Components of Definitions of Death

Commonly Accepted but Unofficial Medical Definition	Evolving but Unofficial Legal Definition
1. Insensibility	1. Cessation of "vital functions"
2. Cessation of Respiration	2. Cessation of Respiration
3. Cessation of Circulation	3. Cessation of Circulation
4. Irreversibility	4. Impossibility of Resuscitation[38]

In comparing the medical and legal concepts, it should be noted that while two of the criteria, cessation of respiration and cessation of circulation, share the same language in law and medicine, there are dissimilarities. A third criteria listed above is "insensibility" from a medical standpoint, while the legal

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[33] However, one newspaper advertisement in May, 1968, appeared in the San Gabriel (California) Tribune as follows:

NEED A TRANSPLANT?

Man will sell any portion of body for financial remuneration to person needing an operation . . . .

Apparently eyes are frequently advertised for sale, often at $50,000 each. *See* Dukeminier *Supplying Organs For Transplantation*, 68 MICH. L. REV. 811 (1970).

[34] Corday, *supra* note 27, at 629.

[35] *Id.*

[36] Wasmuth, *supra* note 26, at 34.

[37] *Id.*

[38] Halley & Harvey, *supra* note 17, at 425.

phraseology is the unspecific "cessation of vital functions." Perhaps most inadequate is the fourth criteria. Irreversibility (of death) is the medical criterion, while the legal version calls for "impossibility of resuscitation." "It is these last that give the most trouble, not because they differ in meaning (which they do not) or in wording (which they do), but because both embody an element of judgment and prognostication without offering any objective measure of final dissolution."[39]

Halley and Harvey admitted that special circumstances might "justify pronouncement of death when consultations consistent with established professional standards have been obtained and when valid consent to withhold or stop resuscitative measures has been given by the appropriate relative or legal guardian."[40] Nonetheless, they proposed the following as a general definition of human death: "Death is irreversible cessation of *all* of the following: (1) total cerebral function, (2) spontaneous function of the respiratory system, and (3) spontaneous function of the circulatory system."[41] While such a uniform definition seems desirable, the need for further refinement is examined in discussion below.

6. *EEG—A Helpful Criterion*

It is important to explicitly recognize that in application of the older concept of clinical death (absence of heartbeat and respiration), the physician faces complexing problems if and when he finds himself maintaining those vital functions through artificial means. Should a person be taken off the "life-maintenance" machines if and when the physician determines that the patient's brain condition is such that meaningful life may not again be attained and enjoyed?

While it may be safely assumed that a significant number of physicians would agree that upon cellular death of the brain, the person is dead, the obvious question becomes "how is 'brain death' determined?" Anoxia, which is an abnormally low amount of oxygen, can silence the bioelectric activity of the living brain.[42] When a brain becomes completely anoxic, no valid electroencephalographic impulses are generated, as are measurable by an electroencephalograph. "[I]t has also become apparent that the electroencephalograph can determine when loss of brain function is irreparable and implies an irreversible absence of life (as understood by the physician)."[43]

It has been argued that apparent EEG silence may not always provide reliable proof of death.[44] However, examples of apparent death due to "flat" EEG, followed by full recovery, have generally been discounted as improper

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39 Editorial, *What and When Is Death?*, 204 J.A.M.A. 539, 540 (1968).
40 Halley & Harvey, *supra* note 17, at 425.
41 *Id.*
42 Hamlin, *Life or Death by EEG*, 190 J.A.M.A. 112 (1964).
43 *Id.*
44 Tentler, *Electroencephalographic Evidence of Cortical "Death" Followed by Full Recovery*, 164 J.A.M.A. 1667 (1957).

diagnoses. Hamlin acknowledges the existence of such examples in his paper,[45] and offers extended discussion concerning the proper application of the machine for "diagnostic" purposes. "But such situations with subsequent restoration of normal vitality do not contain the clinical and electroencephalographic correlates that would support a diagnosis of immutable neurological death."[46] In 1964, Hamlin offered, as a set of conditions for certifying brain death (in association with cardiorespiratory activity sustained by artificial means), the following:

1. No spontaneous respiration for a minimum of 60 minutes.
2. No reflex response (superficial, deep, organic, etc.). No change in heart rate on ocular or carotid sinus pressure.
3. EEG; Flat lines with no rhythms in any leads for at least 60 minutes of continuous recording. No EEG response to auditory or somatic stimuli or to electrical stimulation. Two longer periods of total flat recording some hours apart may be preferred by some.
4. Normal basic laboratory data including electrolyte pattern.
5. Share responsibility for pronouncement of death with other colleagues.[47]

Among the people whom Hamlin recognized as rendering assistance in his pioneering paper was R. S. Schwab, who later co-authored another paper in this specific area.[48] The concept of "cerebral death" which would allow transplantation (of the patient's organs) and termination of extraordinary medical care, was more recently defined as requiring the following: "(1) no reflexes, spontaneous breathing, or muscle activity; (2) no clinical or EEG response to noise or a pinch; and (3) repetition of the above twenty-four or forty-eight hours later."[49]

Recently, the concept of "irreversible coma" has received extensive discussion and analysis. A special committee was established at the Harvard Medical School with a goal of formulating medical standards relating to cadaver organ donors. In August, 1968, the committee issued its final report,[50] and emphasized that "irreversible coma has many causes, but we are concerned here only with those comatose individuals who have no discernible central nervous system activity."[51] If there is (1) no overdose of sedative drugs, (2) no hypothermia, and (3) no encephalitis, the following criteria are said to represent "brain death":

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45 Hamlin, *supra* note 42.
46 *Id.* at 113.
47 *Id.* at 114.
48 Rosoff & Schwab, *EEG in Establishing Brain Death*, June 8, 1967 (paper presented at the meeting of the American Electroencephalographic Society, Atlantic City, New Jersey).
49 Corday, *supra* note 27, at 630 (*Citing* the Rosoff & Schwab paper, *supra* note 48).
50 *A Definition of Irreversible Coma: Report of the Ad Hoc Committee of Harvard Medical School to Examine the Definition of Brain Death*, 205 J.A.M.A. 337 (1968).
51 *Id.*

(1) unreceptivity and unresponsivity—a total unawareness of externally applied stimuli and inner need;
(2) no movements or breathing after observation for one hour by a physician, and a three-minute interval of no spontaneous respiration with the respirator turned off;
(3) no reflexes—the pupils dilated and fixed in that position even when exposed to light, and all other reflexes absent;
(4) a flat electroencephalogram (EEG) properly taken;
(5) all of the above when repeated twenty-four hours later with no change.[52]

It is the opinion of E. Corday that the *Harvard Report*, with its concept of irreversible coma, provides sound guidelines for diagnosis of cerebral death and for discontinuation of extraordinary medical care in the form of life support systems or nutritional aids.[53]

7. *Summary*

It has been recognized, at least implicitly, that the professional beliefs, judgment, and even educated guesswork by the physician or surgeon are of utmost importance. We have noted that the absence of EEG activity is recognized as a valuable aid. Hopefully it may be assumed that in the transplant situation, where precious seconds are of utmost importance, such advanced equipment will be available. "Well and good, but we come around full circle to the problem of the surgical gardener: Can the transplanter afford to wait for a dying organ just to be certain that he is not also a surgical criminal? Can the recipient afford to have him wait?"[54]

One author has suggested, at least partially correctly, that the question "when is a person dead?" presents not a new problem, but is merely an old problem in a new context.[55] It seems apparent, however, that organ transplant procedures have presented extremely complex problems in need of urgent resolutions.

> In the resolution of whatever differences there are between medical and legal definitions of death, it seems clear that physicians rather than barristers must be the ones to establish the rules, not as individuals but as a formally organized body of the highest professional and moral qualifications acting for medicine as a whole. Lawyers and judges are not biologists, nor are they often "in at the death." They would doubtless be glad to follow the leader.[56]

Although some of the language ("it seems clear" and "doubtless") contained in the quotation seems to assume a great deal, and would meet opposition from

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[52] Ward, *Human Organ Transplantation: Some Medico-Legal Pitfalls For Transplant Surgeons*, 23 U. FLA. L. REV. 134, 145 (1970).
[53] Corday, *supra* note 27, at 631.
[54] Editorial, *supra* note 39, at 540.
[55] Luyties, *Suggested Revisions To Clarify The Uncertain Impact of Section 7 of The Uniform Anatomical Gift Act On Determinations of Death*, 11 ARIZ. L. REV. 749 (1969).
[56] Editorial, *supra* note 39, at 540.

many attorneys, the quotation has apparently maintained its validity, as discussed below.

III. Impact of the Uniform Anatomical Gift Act

A. *Introduction*

Due to certain outdated principles of common law, and inadequate provisions in the existing organ and tissue donation statutes, the Commissioners on Uniform State Laws created a special committee in 1965. "Its task was to draft a uniform donation statute, one which would serve as a model for the individual states and provide a uniform, favorable legal setting for the donation and use of organs and tissue in medical research and therapy—specifically, transplantation."[57] On July 30, 1968, the Uniform Anatomical Gift Act [hereinafter cited UAGA] received final approval from the Commissioners, and was quickly endorsed by the American Bar Association. It was subsequently distributed to the legislatures of the individual states. To date, the UAGA has been adopted, with only minor (if any) changes, in forty-eight states.[58] The purpose of the UAGA was summarized early by consultants to the drafting committee as follows:

> To encourage donation and to help meet the need for organs and tissue, unnecessary and cumbersome formalities have been eliminated and only those safeguards required to protect the varied interests have been included. An attempt has been made to protect the rights of the appropriate next of kin, doctors working in this area, and the public interest in a dead body.[59]

B. *Defining Death under the UAGA*

The concession to (or reliance upon) the medical profession, (see Summary, § IIB(7), *supra*) has conspicuously carried over and is contained in § 7(b) of the UAGA: "The time of death shall be determined by the physician who attends the donor at his death, or, if none, the physician who certifies the death. This physician shall not participate in the procedures for removing or transplanting a part."[60]

The lack of a definition of death in the UAGA has been met with variant reactions. The consultants mentioned earlier were A.M. Sadler, Jr. and B.L. Sadler, physician and attorney respectively. Their thesis seems to be that in this area the UAGA has achieved a satisfactory balancing of societal needs and individual rights. The authors feel that the remaining need is for development of an "organized sensitivity" to the problems resolved by the

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[57] Sadler & Sadler, *supra* note 20, at 18.

[58] Apparently only Massachusetts and Utah have not yet passed such an act. For comparison with the state statutes, one source containing the original UAGA in its entirety is an appendix to the Sadler & Sadler article, *supra* note 20.

[59] Sadler & Sadler, *supra* note 20, at 19. The authors include detailed analysis of the thirteen most important provisions of the Act.

[60] Uniform Anatomical Gift Act § 7(b).

UAGA, although they admit that certain problems remain.[61] On the specific question of defining death, after reviewing medical approaches such as EEG criterion, they state: "The similarity of these various criteria indicates that the medical community is moving toward a consensus on this important issue; the Commissioners were justified in choosing not to attempt to arbitrarily include a definition of death in the Act."[62]

Not all writers have agreed that the drafters of the UAGA properly omitted an explicit definition of death. "All the terms of the [UAGA] are dependent upon one central event: the death of the donor. In view of the crucial importance of this event, it is puzzling that the Act pays so little attention to it. This omission is the most crippling aspect of the Act."[63] Although § 7(c) of the UAGA[64] would seemingly provide a "good faith" defense to medical personnel against civil or criminal action, various writers maintain that the protection is not adequate. A few state law additions and amendments to the UAGA, and proposed amendments by law journal authors, shall be reviewed in this respect.

Does the UAGA protect the surgeon if he removes living organs after the medically acceptable[65] definition of "brain death" becomes fact for a given patient? UAGA § 7(b) provides that time of death shall be medically determined by a physician. What role would prior judicial authority play in an action brought in a state which has adopted the UAGA?[66] "[C]ourts which

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[61] Sadler & Sadler, *supra* note 20.

[62] *Id.* at 28.

[63] Ward, *supra* note 52, at 150.

[64] Section 7(c) reads as follows: "A person who acts in good faith in accord with the terms of this Act, or under the anatomical gift laws of another state [or a foreign country] is not liable for damages in any civil action or subject to prosecution in any criminal proceeding for his act."

[65] The EEG, along with other safety guidelines discussed earlier, provide reasonably well accepted procedural norms for the medical profession.

[66] Recall that only two states have not passed the UAGA, or similar statutory enactments. A significant departure from the UAGA is the legislative definition of death enacted in Kansas. Two separate and alternative criteria for determination of death were included. The first law of its kind in the United States, the statute was intended as a means of protecting attending physicians from the accusation of being the last instrument of death when they turned off the heart-lung machine while the person was "legally alive." *See* THE CITATION, June 1, 1971 at 59.

A significant addition incorporated into the Iowa adaptation of the UAGA is IOWA CODE § 142A.8 (1971):

> The procurement, processing, distribution or use of whole blood, plasma, blood products, blood derivatives and other human tissues such as corneas, bones or organs for the purpose of injecting, transfusing or transplanting any of them into the human body is declared to be, for all purposes, the rendition of a service by every person participating therein and, whether or not any remuneration is paid therefor, is declared not to be a sale of such whole blood, plasma, blood products, blood derivatives or other tissues, for any purpose, subsequent to enactment of this section.

Numerous states have passed similar provisions which would seemingly preclude suits against surgeons, hospitals, or others, for damages founded upon contract of sale theories. The probability of bringing a successful negligence action is less well settled however. A legislative attempt to further restrict such potential liability has been recently approved by the Governor of Iowa:

> However, any person or entity that renders such service warrants only under this section that due care has been exercised and that acceptable pro-

have paid lip service in the past to the idea that the time of death is a question of medical judgment have apparently meant that only the time at which all vital functions ceased (the traditional legal definition) was a question of fact. That is, the question of the existence of death was resolved within the context of traditional legal criteria, not on the basis of medical criteria elicited from experts."[67] Although the comment to § 7 of the UAGA[68] explicitly indicates legislative intent to confine the question of death to medical criteria, it seems uncertain whether the courts are so bound. "[T]he consultants, as well as the commissioners, may have been mistaken in their assumption that the time of death has in the past been a question of fact determined solely on the basis of medical criteria."[69] Modern case law is thus far basically silent on this specific question. One suit was filed in Richmond, Virginia, against a transplant team for the amount of $1 million.[70] Unfortunately, no case has been decided which is squarely on point.

A decision worthy of note is *In re Estate of Schmidt*,[71] which preceded the effective date of the UAGA in California by approximately 30 months. The case involved determination of heirship following an auto accident fatal to both husband and wife. Counsel for the husband's estate maintained that the criterion for death determination should be brain death, or irreversible coma, and upon this question the court stated:

> In the opinion of the medical experts death might be the inability to resuscitate or an irreversible coma. However, for purposes of this decision this Court considers death as defined in Black's Dictionary . . . "total stoppage of the circulation of the blood and cessation of . . . respiration and pulsation."
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> Appellants argue that the above definition is an anachronism in view of the recent medical developments relating to heart transplants.

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fessional standards of care in providing such service according to the current state of the medical arts has been followed. Strict liability, in tort, shall not be applicable to the rendition of such service. Iowa Laws ch. 1044 (1972).

67 Luyties, *supra* note 55, at 755.

68 The pertinent part of the comment reads:

Subsection (b) leaves the determination of the time of death to the attending or certifying physician. No attempt is made to define the uncertain point in time when life terminates. This point is not subject to clear cut definition and medical authorities are currently working toward a consensus on the matter. Modern methods of cardiac pacing, artificial respiration, artificial blood circulation and cardiac stimulation can continue certain bodily systems and metabolism far beyond spontaneous limits. *The real question is when have irreversible changes taken place that preclude return to normal brain activity and self* [-]*sustaining bodily functions.* No reasonable statutory definition is possible. The answer depends upon many variables, differing from case to case. *Reliance must be placed upon the judgment of the physician in attendance. The Uniform Act so provides.* (Emphasis added).

69 Luyties, *supra* note 55, at 758-59.

70 Tucker v. Lower, Law & Equity Ct., City of Richmond, Va. (1970). A seven-man jury found for defendants. "According to one juror, it was concluded that medical science has progressed to the point that the 'legal' definition of death is no longer acceptable. The jury was convinced that death occurred when the brain ceased to function." *Opinion and Comment*, 58 A.B.A.J. 833, 834 (1972).

71 261 Cal. App. 2d 262, 67 Cal. Rptr. 847 (Ct. App. 1968).

> They contend that the trial court should have accepted and used . . . [the] definition of death as the inability to resuscitate.[72]

While the court did mention heart transplants and did reject recent medical criteria for determination of death, the decision does not provide the needed clarity concerning medical liability under the UAGA.

A more specific legislative enactment seems desirable, insofar as proper flexibility is not sacrificed. It is recognized that a specific statutory definition of death has been resisted as potentially harmful,[73] and perhaps properly so. It does not follow that revision and amendment to the UAGA would, or could, not serve to alleviate the uncertainty which seemingly exists at present. It seems abundantly clear that medical authorities have considered the problems at length, and are striving for workable solutions.

> The American Medical Association, at its most recent meeting in Florida, set guidelines for heart transplant cases, stipulating that two independent doctors confirm the death of the heart's donor.
>
> A resolution passed by the House of Delegates provided that two physicians "not associated with the surgical team performing the transplant" should determine cause of death, and that it be "evident and of an irreversible type." Also, "the fact of death must be demonstrated by adequate, current, and acceptable scientific evidence in the opinion of the physicians making the determinations."[74]

Medical authorities have properly recognized potential conflict of interest and have provided safeguarding guidelines.

Such medical safeguards do not necessarily decide the outcome of lawsuits. Proper protection (not absolute immunity) could probably be achieved through revision of the UAGA. Various proposals have been offered. A physician-law student has recently suggested that 1) "there is no need for a specific legislative definition of death"[75] and 2) if done without negligence, physicians might apply modern medical criteria for death determination without fear of potential legal liability, were the following amendment adopted:

> [Delete the last sentence [of UAGA § 7(b)] which states: "The physician shall not participate in the procedures for removing or transplanting a part." and substitute:] "If cadaver organs or parts are to be used for transplantation, and if death is to be determined by criteria other than irreversible cessation of heartbeat and respiration, such determination must be made by two concurring physicians, neither of whom shall participate in the transplantation procedures."[76]

Not only is protection to the prospective donor achieved, but needed flexibility is also provided.

Some states have changed § 7(b), although none apparently have changed the first sentence "to insure that it sanctions reasonable medical definitions

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[72] *Id.* at 273, 67 Cal. Rptr. at 854.
[73] *See* note 68 *supra.*
[74] Segal, *Medical Malpractice In An Organ Transplant Case*, 15 PRAC. LAW. 65, 71 (1969).
[75] Ward, *supra* note 52, at 156.
[76] *Id.*

of death regardless of the definitions contained in previous case law."[77] The need for revision is reflected in a comment by a member of the drafting committee: "[While the UAGA purports to leave the determination of death to medical judgment] it seems clear that this judgment must be made on the basis of the cessation of all vital signs. The UAGA *provides no legal justification* for turning off a respirator on a hopelessly unconscious patient with irreversible, widespread brain damage."[78]

Revision of § 7(b) could reasonably ensure that courts would construe the UAGA in a manner consistent with the legislative intent to allow the medical profession to use any reasonable and medically acceptable criteria in determining death. Among various state "changes" in § 7(b),[79] only the Connecticut version significantly clarifies the legislative intent: "The time of death shall be determined by two physicians who attend the donor at his death, or if none, two physicians who certify death, *who shall use generally recognized and accepted scientific and clinical means to determine such time of death.*"[80]

It may be argued that this version still does not provide the clarity needed which would ensure that prior judicial definitions of death would be effectively "overruled."

> One shortcoming of the Connecticut version is that it uses "means," not "criteria." Thus, it could still be interpreted as follows: In determining the time at which all vital functions have irreversibly ceased (conventional definition of death), a doctor shall use recognized medical means. In other words, the Connecticut amendment might simply be restating a principle of negligence—that actions of doctors are tested under the standard of what is acceptable in the medical profession. If interpreted in this manner it would add nothing to the present clause.[81]

In order to ensure that courts will give proper allegiance to legislative intent, and that contrary judicial definitions would be held inapplicable, the following amendment (in italics) has been proposed:

> The time of death shall be determined by a physician who tends the donor at his death, or, if none, the physician who certifies the death. *The time of death shall be considered in law to be solely a medical question which shall be determined on the basis of generally recognized and accepted scientific and clinical criteria, notwithstanding any legal definition of death to the contrary.*[82]

If state legislatures would enact such a provision, heart surgeons would prob-

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[77] Luyties, *supra* note 55, at 759.

[78] Curran, *The Legal Meaning of Death*, 58 AM. J. PUB. HEALTH 1965, 1966 (1968). *See* 11 ARIZ. L. REV. 749, n.30, for critique of Curran's reasoning.

[79] For discussion of some of the changes made by various state legislatures, *see* 11 ARIZ. L. REV. at 760, nn.32 & 33 (1969).

[80] CONN. GEN. STAT. ANN. § 19-139i (Supp. 1971). However, Kansas has recently defined death by statute. *See* note 66 *supra*.

[81] Luyties, *supra* note 55, at 760.

[82] *Id.*

ably sigh a breath of relief. Whether judges, attorneys, and the lay public would also find such a "solution" desirable is a question which cannot be answered herein.

IV. Ramifications for the Insurance Industry

A. *General Introductory Discussion*

Would such legislative revision of the UAGA have significant bearing on the health and life insurance industries? (It is assumed that such amendment would lay to rest much of the present controversy and uncertainty regarding potential malpractice—negligence liability.) It certainly seems reasonable to expect a significant number of major organ transplants in the future, in spite of the allegedly poor "track record," some introspection, and criticism attendant to the disappointments of the recent past.[83] If indeed we are experiencing a transplant "moratorium" of sorts with respect to human hearts, it is probably safe to assume that the major problem concerning rejection will be alleviated or eliminated in the not too distant future. In addition, the utilization of artificial hearts and other mechanical "aids," heretofore not discussed in this paper, will probably also become rather commonplace.[84]

The impact of such developments (including "encouragement" for anatomical gift making through legal clarification) upon life and health insurance companies is significant, and in certain instances, an immediate problem.

> Under current mortality conditions, the chances of eventual death from some cardiovascular-renal disease are about three in five, rising steadily with advances in age until by age sixty-five these chances rise to 647 per one thousand males and 709 per one thousand females. If death from major cardiovascular-renal diseases were cut by fifty percent, there would be an estimated gain in expectation of life of from three to nearly five years. The significance of this gain becomes more apparent when you consider that from 1900 to 1962 the expectation of life for a white male at age sixty-five in the United States increased only 1.4 years . . . .[85]

Although early estimates indicated that between 100,000 and 300,000 lives might be saved annually by a mechanical heart or by transplant, a task force appointed by the government has revised such estimates downward to indicate that only one out of six of approximately 200,000 Americans under age sixty-five who die from heart disease each year might be saved by such pro-

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[83] *See* Thompson, *supra* note 1.

[84] Dr. Lowell Harmison, chief researcher for the National Heart and Lung Institute, Washington, D.C., has helped to develop an artificial heart with a nuclear-powered motor. Harmison recently stated that between 15,000 and 100,000 Americans a year could initially benefit from artificial hearts. The artificial heart, which is made of silicone rubber and has four pumping chambers, differs from mechanical hearts because it doesn't need recharging. The artificial heart might cost from $5,000 to $6,000 plus hospital and surgical costs for implantation. In contrast, heart transplants cost from $5,000 to $50,000. The Des Moines Register, March 3, 1972, at 6, col. 6.

[85] Burleson, *The Uniform Anatomical Gift Act and Its Implications for Life and Health Insurance*, 5 Forum 171, 177-78 (1969).

cedure.[86] Perhaps it should be reiterated that in an area such as this, past experiences, if labeled failures, do not preclude future successes leading to commonplace extensive usage.

B. *Life Insurance*

Life insurance contracts are directly affected by extended life expectancies. A contract may be affected "both during the premium paying period and the benefit payment period if available options measured by life contingencies be selected."[87] In addition, benefit payments under annuity contracts where life contingencies are involved in measuring the benefit payment period will also be affected.[88] The likelihood of increased future success in this field, even if delayed for a few years, becomes immediately significant when it is remembered that many life insurance policies are long term contracts which often remain effective for over half a century. Certainly life insurers must devote actuarial study to the possibilities inherent in this area, in order to "match" the premium charge to forecasted experience. "It could be that mortality savings and the additional premiums collected over the extended pay-in period will offset the increased benefit payment. But, it may not be beyond the speculative realm to envision life contingency settlement options taking into account also the contingencies of vital organ transplants or the implantations of mechanical devices."[89]

Interesting questions arise when one speculates as to how courts might apply past and present legal concepts to the transplant donor or donee whose insurer disputes the validity of a claim. While detailed discussion of the concept of euthanasia (mercy killing) and ramifications thereof are beyond the scope of this Note, certain hypothetical situations should be recognized as likely to become real. While statutory law becomes significant, it seems a safe generalization that the beneficiary of a life insurance policy who intentionally and feloniously takes the life of the insured has usually been considered precluded from recovering the proceeds.[90] If, on the other hand, the insured's death is caused by the beneficiary unintentionally and non-feloniously, the general rule is that the beneficiary may recover the proceeds.[91] "Where a policy or bylaw of the insurer provides that the policy shall be void if the insured's death is caused by the beneficiary, regardless of the character of the killing, such an event has been held to release the insurer from liability for the insurance proceeds."[92] Consider the beneficiary who is consulted concerning the insured, whose life is being prolonged only through use of mechanical devices. A potential conflict becomes obvious. If the beneficiary en-

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86 *Id.* at 178 (*citing* The Wall Street Journal, Oct. 16, 1969; The National Observer, Jan. 12, 1970, at 13.).
87 *Id.*
88 *Id.*
89 *Id.*
90 Annot., 27 A.L.R.3d 794, 802 (1969).
91 *Id.* at 809.
92 *Id.* at 826.

dorses removal of such devices, and death ensues very quickly, would such action be deemed wrongful? Section 7(b) of the UAGA provides that the physician who determines the time of death must not participate in the removal or transplantation of the organ. "It is generally agreed that death must be declared prior to discontinuation of resuscitative measures—that is—death must be declared and then the respirator turned off."[93] If such procedure is not followed, and the beneficiary consents to discontinuance of mechanical life support, are insurance proceeds to be lost under such theories mentioned earlier?

It has been noted that many heart "donors" are young, healthy individuals who are accidentally injured so severely that death, if not immediate, is imminent. In instances where an injured person is living only through means of artificial support, there could easily become involved "a question of validity or construction of provisions in accident insurance policies which limit the payment of benefits for death or loss of a bodily member . . . to those losses which occur within a specified time after the date of an accidental injury."[94] Any decision to terminate such life support could have serious insurance coverage ramifications.

May a dying person refuse such "mechanical" life support?[95] If allowed to do so, could insurance companies deny payment of proceeds of the policy, be it accident, life, or other? Dr. Elisabeth Kubler-Ross, an international consultant on the care of dying patients and their families, has indicated that in many instances the dying person is taken from his familiar environment and rushed to a hospital room where, instead of getting human attention and understanding, he may receive a heart machine, transfusions, infusions and possibly a tracheostomy. It is also her contention that while a person near death may cry out for a person to talk with, he may instead be faced with a team of medical specialists who are preoccupied with medical machinery and the patient's physiological functions.[96] The impact of such expert opinion upon the law and insurance contracting seems indefinite, and is an area in need of closer examination.

Whether euthanasia is the legal equivalent to suicide is apparently an undecided issue, in an uncertain and ambiguous area. "Britain's Voluntary Euthanasia Society, which includes eminent physicians, lawyers and politicians on its executive committee, is pressing for a new law which would 'allow doctors to grant euthanasia to a patient who had signed a declaration at least thirty days beforehand, asking for it in certain clearly defined circumstances.' "[97] Most life insurance policies presently include a non-payment clause

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[93] Richards, *Medical-Legal Problems of Organ Transplantation*, 21 HASTINGS L.J. 77, 103 (1969).

[94] Annot., 39 A.L.R.3d 1311, 1312 (1971). *See also* Annot., 75 A.L.R.2d 876 (1961); Annot., 68 A.L.R.2d 150 (1959); Annot., 38 A.L.R.2d 768 (1954).

[95] *See* Davis, *The Dying Patient: A Qualitative Right to Refuse Medical Treatment*, 7 J. FAMILY L. 644 (1968).

[96] The Des Moines Register, Sept. 23, 1971, at 1, col. 6.

[97] The Des Moines Register, Aug. 23, 1971, at 14, col. 3.

if the holder deliberately takes his own life.[98] Quaere, how would insurance carriers adapt to legislation such as that proposed in England? Additionally, the euthanasia issue could complicate the earlier mentioned considerations concerning insurance contract clauses which limit coverage to specified periods of time.[99]

C. *Health, Sickness, and Disability Plans*

Implicit in parts of the above discussion upon health and sickness insurance and upon policies providing disability benefit payments can be, and is, immediate and significant. "Mike Kasperak's bill for his heart transplant at Stanford Medical Center was $28,845. This does not include the fee for the medical doctors . . . . Kasperak's health insurance plan paid his bill."[100] The Public Health Service has estimated that where transplantation is coordinated with home dialysis over an eleven year period, the cost would be somewhere around $73,500, which would include a second kidney transplant.[101]

The observation has validly been made that very few outstanding disability, sickness and related policies were drafted with any foresight concerning kidney transplant and dialysis, heart transplants or artificial organs, or the insureds as potential donees or donors.[102] (There is substantial case law in non-transplant contexts [which will not be analyzed herein] going to the question of whether it is necessary for the insured to first submit to medical treatment, or surgical operation, in order to recover disability benefits under insurance contracts.)[103] No meaningful data has been discovered which would indicate the potential scope of liabilities under such older policies. One authoritative statement along these lines is indicative of the rather obvious proposition: "We're definitely vulnerable with most of our existing, diverse policy language . . . and if we choose to avoid or limit our future liability on organ transplant claims, we'll probably only be able to do so by very precisely word-

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98 Such a simple statement is misleading. Suicide clauses have been the subject of frequent litigation. Two complicating factors may be mentioned. First is the effect of incontestable clauses upon suicide clauses. Secondly, there may be disagreement over when the period provided for in a suicide clause of a life or accident policy begins to run. *See* Annot. 37 A.L.R.3d 337 (1971); Annot. 37 A.L.R.3d 933 (1971).

99 *See, supra* note 94.

100 Felton, *Heart Transplants and Life Insurance*, 23 J. AM. SOC'Y C.L.U. 22, 25 (1969).

101 Burleson, *supra* note 85, at 179 *citing* Jones, *Kidney Dialysis and Transplants and Health Insurance Coverages*, PENSION AND WELFARE NEWS., Sept., 1969, at 39, 41. The costly burden of kidney disease may be significantly distributed beyond the private individual and his insurance carrier. The Iowa Legislature recently passed a bill establishing an 11-member state kidney disease advisory committee. Initially, the bill, as amended, would provide $30,000 to the committee to assist the state health commissioner in developing programs to help Iowans with kidney diseases. Parts of the funds are to be used to make dialysis machines more available throughout the state and additionally to establish a cataloging system for persons who want to donate their kidneys. A stated goal is for further appropriations to aid those who cannot afford to pay for dialysis treatments. The Des Moines Register, March 3, 1972, at 3, col. 5. Governor Robert Ray signed this bill into law on March 9, 1972. Iowa Laws ch. 1042 (1972). For further discussion of the effects of such ruinous dialysis rates, *see* 98 TIME, Dec. 20, 1971, at 57.

102 Burleson, *supra* note 85, at 179.

103 Annot., 126 A.L.R. 136 (1940).

ing the language of future policies or by specifically excluding such claims from future payments."[104]

One approach which has been discussed would allow a medical care plan to pay sickness, hospitalization and surgical benefits in connection with the insured organ donor's donation, so long as the donor is alive. Such a plan would not, as presented, pay the expense of organ removal for transplants *after* the insured donor's *death*.[105] Have we not come full circle to the definitional problems discussed in Part II, *supra*? The same authority suggests that where the recipient of the organ is the insured, the cost of an artificial organ implanted might be covered as a miscellaneous expense under a hospital policy and an eligible expense under a major medical plan, just as are artificial limbs, etc.[106] Explicit contracting seemingly is justifiable, indeed mandatory. "If the cost of an artificial organ is covered, it might follow that the cost of procurring and implanting a natural organ would also be covered."[107]

Unanticipated liability in individual hospital confinement and surgical policies presently outstanding may prove to be substantial.

> It is rather common in this type of policy to list surgical schedules with maximum benefits for the listed procedure and then to add a general provision reading somewhat as follows: "The amount payable for any surgical procedure not listed shall be determined by the gravity and severity of the surgical procedure as compared to analogous surgical procedures which are listed."[108]

The question relating to such provision is properly posed: "What would be the attitude of the company under this provision if a claim were made for the expense of a vital organ transplant procedure?"[109]

Insurance companies obviously must deal with the likelihood that under disability income benefit policies their potential liability could be significantly extended because of transplant patient disability for lengthy periods of time. The possibility that such extended disability could be voluntarily induced must not be ignored by future policy drafters.[110]

D. *Steps Presently Being Taken*

Specific organ transplant benefits are beginning to appear in various policies. Perhaps the first company to take positive steps with relation to the cost of organ transplants was California-Western States Life Insurance Company. In September, 1968, this company's Supplemental Payment for Transplant Medical Expenses liberalized major medical coverage in several ways:

1. It raised maximum payments to $50,000 for organ transplants and to $20,000 for artificial kidneys.

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104 Burleson, *supra* note 85, at 179, *quoting* Dollase, *Organ Transplants and Health Insurance Claims*, INS. MGMT. REV., May 3, 1969, at 21, 23.
105 Burleson, *supra* note 85, at 179.
106 *Id.*
107 *Id.*
108 *Id.* at 179-80.
109 *Id.* at 180.
110 *Id.*

> 2. It eliminated coinsurance and pays 100 per cent of covered charges for organ transplants over $20,000 to maximum payment of $50,000.
>
> 3. On organ transplants it pays the travel costs, hospital, surgical, medical, and nursing expenses incurred by the donor and the donee.
>
> 4. With respect to artificial kidneys the policy provides training of an insured or his attendant in operating the equipment, travel expenses, and charges for the purchase or rental and installation thereof, as well as charges for supplies and maintenance of the equipment at home.
>
> 5. It removes the maximum limit on room and board charges for organ transplants if private room or intensive care facilities are necessary.[111]

Under the provisions of this policy, the transplant benefit period runs for twelve months beginning with the first day of hospitalization for the transplant surgery.[112] Other significant provisions should be noted, as follows: "A dialysis benefit begins on first day of hospitalization and ends when the use of dialysis equipment is no longer necessary. Pre-existing conditions are not covered until the end of a ninety-day period free of medical treatment."[113]

An innovative approach which has been implemented by Ohio State Life allows policyholders striken with chronic kidney failure to draw against their life insurance policy death proceeds to finance artificial kidney machine treatments.[114]

> The plan works this way: a policyholder requiring use of a hemodialyzer (the artificial kidney machine) may draw up to $10,000 per year on his life policy, not to exceed 50% of the total available death benefit. The average annual cost of treatment is about $10,000. As an example, a person with a $50,000 policy could draw up to $10,000 in each of the first two years, and $5,000 the third year for treatment.
>
> The money drawn by the insured is an advance on death benefits and not a loan, so no interest is charged.[115]

Standard Security Life applies a somewhat similar plan more directly to heart transplants: "[A] policyholder who has been insured for at least two years, may request reimbursement for expenses up to a maximum amount of $25,000, but not to exceed 50 per cent of the face amount of his insurance."[116] It is recognized that many companies not mentioned herein have likely initiated policy coverage similar to those mentioned, or are studying various al-

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111 Burleson, *supra* note 85, at 180, *citing* Brosseau, *Organ Transplants Can Be Covered*, INS. NEWS, Dec., 1968, at 22. (Burleson also acknowledged the assistance of Mr. Howard L. Jeske, V.P. and Gen. Counsel, Cal.-Western States Life Ins. Co.)

112 Burleson, *supra* note 85, at 180-81.

113 *Id.* at 181.

114 Felton, *supra* note 100, at 24.

115 *Id.* at n.14, *quoting* Editorial, *Creative "Life" Insurance*, 72 NATIONAL UNDERWRITER, Jan. 20, 1968, at 22.

116 Felton, *supra* note 100, at 25.

ternatives. Experience with such innovative policies must be carefully analyzed in future years.

E. *Another Problem Area*

In addition to various "organ transplant and mechanical life support mechanism" related problems, one additional problem area which "is just appearing on the horizon" deserves mention. There is a science which deals with the production of very low temperatures and their effect on the properties of matter. A new branch of cryogenics, called cryonics, "focuses on human living material and how human bodies can be frozen and thus preserved until a cure for the cause of death can be found."[117] A number of people have now "been frozen," but as of the date of this article no report of "thawing-out," or bringing the "freezee" back to life, had been discovered.[118] This new and exciting area is rife with present and potential complexities, many similar to ones discussed earlier in this paper. Hypothetical situations,[119] and explicit discussion of legal problems in the area,[120] are included in Spector's article. Life insurance companies are obviously uncertain, and therefore hesitant to become involved in this area. "Although [Ettinger] insists that 'there is an immense *new* market for life insurance,' thus far the companies have flatly refused to write policies in which a cryonics society is the named beneficiary."[121] "Flat refusal" will not suffice, and hopefully we may expect progressive insurance companies to cope with the problems in this area.

V. Conclusion

Lawmakers seemingly have done an admirable job in their attempts to improve the "climate" for organ donation. Legal ramifications in the time-pressured transplant area have been somewhat clarified, but statutes deserve further attention and revision. It seems that legal authorities and experts in other disciplines must continue to cooperate and coordinate their study efforts, for keeping pace with medical advancements should prove to be a monumental task, the area of cryonics being one "difficult" example. Insurance carriers as an industry will attempt to determine whether special, specific purpose, traditional policies with increased benefits and higher premiums, or other innovative and unique policy provisions can prove most workable and beneficial in the areas under review. The task, though difficult, should be a fascinating one.

Vernon L. Traster

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117 Spector, *Legal Implications of Cryonics*, 18 Clev.-Mar. L. Rev. 341 (1969).
118 Supposedly the first person frozen was Dr. James Bedford, in Jan., 1967. *See* Ettinger, *Cryonics and The Purpose of Life*, 84 Christ. Cent. 1250 (1967). *See* Ettinger, *How the Nonfuneral Was Arranged*, 62 Life, Feb. 3, 1967, at 21.
119 Spector, *supra* note 117, at 346.
120 *Id.* at 356.
121 *Id.* at 354.